

# Candidate Information Bulletin



## STATE OF MAINE ELECTRICIANS EXAMINATION

### Examination Requirements

An applicant must meet the following requirements for the following examination(s):

#### **MASTER:**

- Complete at least 4,000 hours of service as a journeyman electrician or at least 12,000 hours of experience in electrical installations, as defined in section 1101, and complete a program of study comprising 576 hours as approved by the Electricians' Examining Board or from an accredited institution. The 576 hours shall consist of 450 hours of required study (see list below), including a course of not less than 45 hours in the current National Electrical Code and 126 hours of degree-related courses;
- Any person who holds a journeyman electrician's license or limited license under this section, or former section 1202, sub-section 1, prior to July 1987, shall be eligible to take the examination for a master electrician's license, provided that the applicant has completed the number of hours of uninterrupted service or experience required by this subsection and has completed 45 hours of current National Electrical Code.

#### **JOURNEYMAN:**

- Complete at least 8,000 hours of service as an apprentice or helper electrician or at least 8,000 hours of experience in electrical installations, as defined in section 1101, and satisfactorily complete a program of study comprising 576 hours as approved by the Electricians' Examining Board or from an accredited institution. The 576 hours shall consist of 225 hours of required study (see list below), including an approved course of not less than 45 hours in the current National Electrical Code; and 351 hours of elective study, comprised of all trade-related electives, or 135 hours of the 351 hours of elective study can be degree related;
- Be a graduate of an accredited regional vocational high school two-year electrical program, have worked 8,000 hours in the field of electrical installations under the supervision of a master electrician or the equivalent and have completed a course of not less than 45 hours in the current National Electrical Code;
- Be a graduate of an accredited Maine vocational-technical institute electrical program, have worked 4,000 hours in the field of electrical installations

under the supervision of a master electrician or the equivalent and have completed a course of not less than 45 hours in the current National Electrical Code. Persons qualifying under this paragraph may take the journeyman's examination upon graduation if application is made within one year of graduation; or

- Be an electrical apprentice registered with the Maine State Apprenticeship and Training Council and have completed 576 hours of related instruction, as defined in this paragraph, prescribed in their apprentice program, the 8,000-hour approved work hours and a course of not less than 45 hours in the current National Electrical Code. Persons qualifying under this paragraph may take the journeyman's examination after completion of 576 hours of instruction, if application is made within one year of the completion of the instruction.

### REQUIRED STUDY

#### **MASTER (450)**

Basic Electricity I  
Basic Electricity II  
Basic Electronics I  
Math I  
Controls I  
Controls II  
Motors  
Blue Print Reading/Drafting  
Transformers  
Current National Electrical Code

#### **JOURNEYMAN (225)**

Basic Electricity I  
Basic Electricity II  
Math I  
Controls I  
Current National Electrical Code

### LIMITED LICENSE TO:

#### **WATER PUMPS**

- A limited electrician in water pumps shall have 135 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 2,000 hours of experience, at least 1,000 hours of which shall be in installing water pumps. The privileges of practice shall be restricted to electrical work between branch circuits and power supplies.

### **OUTDOOR SIGNS (INCLUDING SIGN LIGHTING)**

- A limited electrician in outdoor signs, including sign lighting, shall have 135 hours of limited electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 2,000 hours of experience, at least 1,000 hours of which shall be in installing outdoor signs and sign lighting. The privileges of practice do not include branch circuit wiring.

### **GASOLINE DISPENSING**

- A limited electrician in gasoline dispensing shall have 135 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 2,000 hours of experience, at least 1,000 hours of which shall be in installing gasoline dispensing equipment. The privileges of practice shall be restricted to electrical work between the branch circuit and the power supply.

### **TRAFFIC SIGNALS (INCLUDING OUTDOOR LIGHTING OF TRAFFIC SIGNALS)**

- A limited electrician in traffic signals, including outdoor lighting of traffic signals, shall have 135 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 2,000 hours of experience, at least 1,000 hours of which shall be in installing traffic signals.

### **HOUSE WIRING**

- A limited electrician in house wiring shall have 225 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 4,000 hours of experience, at least 2,000 hours of which shall be in installing house wiring. The privileges of practice shall be restricted to one-family and two-family dwellings, including modular and mobile homes.

### **REFRIGERATION**

- A limited electrician in refrigeration shall have 270 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 6,000 hours of experience, at least 3,000 hours of which shall be in installing refrigeration. Graduates of a Maine vocational-technical institute electrical program in refrigeration approved by the Electricians' Examining Board or from an accredited institution shall be credited with 4,000 hours of

experience upon graduation. Privileges of practice shall be restricted to all associated wire from the loadside of distribution.

### **LOW ENERGY**

- A limited electrician in low energy, including fire alarms, shall have 270 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 4,000 hours of experience, at least 2,000 hours of which shall be in low energy installations. Any person having a limited license in fire alarms or experience in the installation of low-energy electronics, as defined by the National Electrical Code, prior to June 14, 1987 shall automatically be licensed as a limited electrician in low energy. (4,000 hours of experience in the installation of low-energy electronics will still have to be documented.)

### **CRANE TECHNICIAN**

- A limited electrician as a crane technician shall have 135 hours of electrical education as approved by the Electricians' Examining Board or from an accredited institution including an approved course of not less than 45 hours in the current National Electrical Code and 2,000 hours of experience. Privileges of practice covers the installation of electrical equipment and wiring used in connection with cranes, monorail hoists, hoists and runways.

## **Examination Application Form Procedures**

Eligibility to take a license qualification examination is determined by the Electricians' Examining Board of the State of Maine and the Department of Professional and Financial Regulation. For applications and detailed information about eligibility requirements, contact:

**Electricians' Examining Board**  
Office of Licensing and Registration  
35 State House Station  
Augusta, Maine 04333  
207.624.8610  
[www.maineprofessionalreg.org](http://www.maineprofessionalreg.org)

You must submit the Examination Application and \$25 application fee for review to the Board at the above address.

Once you have been approved by the Board to sit for an examination, you will be notified, in writing, of the procedure to schedule your examination appointment.

## Examinations by Thomson Prometric

The Department of Professional and Financial Regulation has contracted with Thomson Prometric (formerly Expor Assessment) to proctor its examination program. Thomson Prometric provides computerized examinations through the multistate Prometric Testing Network of testing centers. You may test at any Prometric testing center across the United States. Thomson Prometric works closely with the Board and its Examination Review Workshop to assure that examinations meet the requirements and professional test development standards. All questions for information about examinations should be directed to:

**Thomson Prometric**

1260 Energy Lane

St. Paul, MN 55108

800.343.6001

TDD User: 800.790.3926

Fax: 800.347.9242

## Scheduling the Examination

After you receive notification from the Board that you have been approved to sit for an examination, you must:

- Review this Bulletin and understand the conditions set forth.
- Schedule your examination with Thomson Prometric.

The examination fee is \$50.

### INTERNET SCHEDULING

You may schedule your examination online with Thomson Prometric at any time at [www.exporonline.com](http://www.exporonline.com). To use this service on our Web site, follow these easy steps:

- Go to [www.exporonline.com](http://www.exporonline.com) and select **For Test Takers**.
- Choose **Maine** from the list of states provided.
- Under **Construction**, click on **State Construction License Exams**.
- Click on **Schedule, Reschedule, Cancel or Confirm Your Appointment Online**.
- Follow the simple, step-by-step instructions to complete the scheduling process. Please have your MasterCard or Visa available for online payment of examination fees.

### PHONE SCHEDULING

To schedule by phone, call Thomson Prometric at 800.343.6001 between 8 a.m. and 9 p.m. Eastern time, Monday through Friday. Schedule your exam early to get your preferred site and time.

**Note:** If you require ADA accommodations, you must schedule your examination by calling 888.226.9406.

Testing does not take place on the following holidays or weekends on which the holiday falls:

- Martin Luther King Jr. Day
- Labor Day
- Presidents' Day
- Thanksgiving Day and day after
- Memorial Day
- Christmas Day and day after
- Independence Day and the day before

**Note:** Be advised that there may be additional state-observed holidays in the state where you schedule your exam appointment.

### RESCHEDULING YOUR APPOINTMENT

To avoid a rescheduling fee, you must contact Thomson Prometric at least **three full business days** before the day of your scheduled appointment. **Before you reschedule your examination**, refer to the following chart to determine the *last day* you may reschedule without paying a \$40 rescheduling fee.

**Note: The schedule below does not include holidays.**

If your exam is on:	Call by 9 p.m. Eastern time the previous: (this is the last day you may call without paying a rescheduling fee)
Monday	Tuesday
Tuesday	Wednesday
Wednesday	Thursday
Thursday	Friday
Friday	Monday

If you do not allow at least three full business days to reschedule your appointment, as described above, you will be required to pay a \$40 rescheduling fee prior to choosing another appointment. You may pay this fee with Visa or MasterCard and reschedule your appointment online or by calling Thomson Prometric. You may also pay the rescheduling fee by mailing a cashier's check, company check, money order, Visa or MasterCard information to Thomson Prometric.

### ABSENT OR LATE FOR THE EXAM APPOINTMENT

If you miss your appointment, or arrive late for your appointment and are not allowed to test, you will need to reschedule your exam and pay a \$40 rescheduling fee prior to choosing another appointment. This fee will allow you to use your original exam registration.

If you are unable to attend your scheduled examination due to illness or emergency, call Thomson Prometric. Under certain circumstances, the fee to reschedule may be waived. Thomson Prometric reserves the right to request documentation to support any illness or emergency claim.

### EXAMINATION REGISTRATION EXPIRATION

You have two (2) years from the examination approval date to sit for the examination. After two (2) years, you must re-apply. Another \$50 exam fee is required.

## EMERGENCY CLOSING

In the event of severe weather or emergencies, Thomson Prometric may need to cancel scheduled exams. In this situation, Thomson Prometric personnel will attempt to contact you via telephone; however, you may check on test site closures by calling Thomson Prometric. If the site is closed by Thomson Prometric, exams will be rescheduled at your earliest convenience, without a rescheduling fee.

If a test center is open for testing and you choose not to appear for testing, you will be required to pay a \$40 rescheduling fee prior to choosing another appointment.

## Special Test Considerations

### AMERICANS WITH DISABILITIES ACT (ADA)

If you require testing accommodations under the *Americans with Disabilities Act* (ADA), please call Thomson Prometric at 888.226.9406 to obtain an Accommodation Request Form. Reasonable testing accommodations are provided to allow candidates with documented disabilities, which are recognized under the *Americans with Disabilities Act* (ADA), an opportunity to demonstrate their skills and knowledge. Candidates should submit professional documentation of the disability with their application to help determine the necessary testing arrangements. Thirty days' advance notice is required for all testing arrangements. There is no additional charge for these accommodations.

Note: If English is your second language, a language barrier is not considered a disability.

## Appeal Committee

Our goal is to provide a quality examination and pleasant testing experience for every candidate. If you are dissatisfied with either and believe we can correct the problem, we would like to hear from you. We provide an opportunity for general comments at the end of your exam. Your comments will be reviewed by our personnel, but you will not receive a direct response.

If you are requesting a response concerning the exam content, registration, scheduling or test administration (testing site procedures, equipment, personnel, etc.), please submit an appeal in writing. Your appeal letter must include your name, Social Security number, exam title, date tested and details of your concern including all relevant facts, your signature and return address. Mail your appeal letter to:

**Thomson Prometric**  
**ATTN: Appeal Committee**  
1260 Energy Lane  
St. Paul, MN 55108

The Appeal Committee will review your concern and send you a written response within 10 business days of receipt.

**Faxed appeals will not be accepted, as an original signature is required.**

## Copyrighted Exam Questions

All test questions are the copyrighted property of Thomson Prometric. It is forbidden under federal copyright law to copy, reproduce, record, distribute or display these test questions by any means, in whole or in part, without our written permission. Doing so may subject you to severe civil and criminal penalties, including up to five years in prison and/or a \$250,000 fine for criminal violations.

## Taking the Examination

Your examination will be given by computer at a Prometric testing center. You do not need any computer experience or typing skills to take this examination. You will have a personalized introduction to the testing system and an introductory lesson, which takes place on the computer, before the start your exam. You should arrive at least 30 minutes before your scheduled examination appointment in order to verify your identification and sign in.

You must present a valid form of identification before you may test, and it must meet the following criteria:

- The document must be government-issued (driver's license, passport, state-issued identification card or military identification);
- It must have a current photo or physical description and your signature; and
- The name on the identification must be the same as the name used to register for the examination (including designations such as "Jr." or "III," etc.)

Failure to provide appropriate identification at the time of the examination is considered a missed appointment. If you cannot provide the identification as listed above, contact Thomson Prometric before scheduling your exam appointment to arrange for an alternative way to meet this requirement.

## What to Bring to the Examination

**You MUST bring the following to the test center:**

- *National Electrical Code*, current edition (the Hardcover Handbook is NOT allowed in the exam, and no loose or attached notes are allowed in your Code book).
- Current driver's license, passport, military or state-issued identification card (Government or State issued identification only). See *Taking the Examination* for identification criteria. **You will not be permitted to test without proper identification.**

**Note:** You may bring a silent calculator or slide rule for use at the test center. Refer to *Regulations at the Test Center* for type of calculator permitted.

### Regulations at the Test Center

To ensure that all candidates are tested under equally favorable conditions, the following regulations and procedures will be observed at each test center:

- Only approved references are allowed during the examination. Candidates are required to bring the *National Electrical Code*. Photocopies of reference materials may NOT be used. No handwritten or additional notes are allowed in the reference books (no letters, words, diagrams, etc.). Any reference material that has been written in during the exam will be confiscated. Highlighting and permanent tabbing is acceptable prior to the exam. Please note that Post-it® notes are not permanent and will not be allowed. Sharing reference materials is not allowed. Reference materials will be checked at the examination site before and after the examinations.
- Candidates may not use any other reference materials, papers or study materials at the test center. Candidates found with these or any other aids will not be allowed to continue the exam and their answers will not be scored.
- Candidates may bring a calculator or slide rule to the test center. Only silent, handheld, solar or battery-operated, nonprogrammable calculators (without paper tape-printing capabilities or alphabetic keypads) may be used. Calculators will be available at the test center.
- Thomson Prometric is not responsible for items left in the reception area of the testing center. While lockers are provided, it is recommended that personal items not be brought into the testing center. Note the following:
  - Electronic equipment such as cameras, tape recorders, cell phones, PDAs and pagers are not permitted in the testing room and must be powered off while stored in a locker.
  - Other personal items not allowed in the testing room include digital watches, outerwear that is not being worn while testing (sweater, jacket, etc.), brief cases, purses, etc.
  - Pocket items (wallet, keys, etc.) must remain in candidate's pocket during testing or placed in a locker.
- Weapons are not allowed at the testing center.
- Candidates that leave the examination room while an exam is in progress must sign out/in on the roster and will lose exam time.

- Candidates will not be permitted to use any electronic devices or phones during breaks.
- No guests, visitors or family members are allowed at the testing center.
- Candidates who engage in any kind of misconduct or disruptive or offensive behavior, such as giving or receiving help, taking part in an act of impersonation, removing test materials or notes from the testing room, rude or offensive language, or behavior that delays or interrupts testing, may be dismissed from the examination.

Failure to follow any of these security procedures may result in the disqualification of your examination. Thomson Prometric reserves the right to audio and videotape any examination session.

### Examination Results

At the end of your exam, your score will be shown on screen and you will receive a printed Score Report. Any questions or comments you have about your examination should be directed to Thomson Prometric.

#### RELEASE OF SCORE INFORMATION

Exam scores are released only with the candidate's written consent. The Examination Registration Form constitutes written authorization for Thomson Prometric to release exam scores to the Department of Professional and Financial Regulation, Maine Electricians' Examining Board. To ensure confidentiality, exams results **will not** be released over the phone or faxed.

#### UNDERSTANDING EXAM RESULTS

A panel of experts in the electrical field established the recommended passing score for the Maine electrical examinations by determining the minimum knowledge needed to be licensed. Candidates who have indicated, through their performance on the exam, that they possess these qualifications will receive a Score Report with the word **"PASS"** printed on it.

Candidates who do not pass the exam will receive a Score Report with the word **"FAIL"** printed on it. The Score Report will also contain the candidate's numerical score and a Strength and Weakness Report.

#### PASSING CANDIDATES APPLYING FOR A LICENSE

Once the exam scores have been released to the Department of Professional and Financial Regulation, Maine Electricians' Examining Board, the Board will mail to candidates who pass the examination a licensing application.

## RETAKING AN EXAMINATION

Candidates must wait 14 days before retaking a failed exam. Candidates may retake any failed exam(s) within 24 months of their original testing date. If a candidate fails to obtain a passing score during the 24 months, the candidate must reapply through the state.

### Format of the Exams

Examinations are open book, multiple-choice format. Some questions may refer to a figure drawing, table or chart in the examination booklet. You are allowed four hours to complete the examination. The minimum score required to pass each examination is 70%.

The examination categories are:

Master Electrician – 80 questions

Journeyman Electrician – 70 questions

Limited Electrician – 50 questions.

The Limited categories are:

- House Wiring
- Low Energy
- Gasoline Dispensing
- Outdoor Signs
- Traffic Signals
- Water Pumps and Refrigeration
- Crane Technician

### Exam Content Areas

The Master, Journeyman, and Limited examinations are based on the following content areas. Under each subject heading is shown the approximate percentage of questions in that subject area for each examination.

#### MASTER AND JOURNEYMAN

- **Grounding and Bonding**  
**Journeyman 11%**                      **Master 11%**  
Determination of system and circuit grounding requirements, methods and location of grounding connections. Choosing proper size grounding conductors, bonding of enclosures, equipment and metal piping systems.
- **Services, Feeders, Branch Circuits and Overcurrent Protection**  
**Journeyman 13%**                      **Master 13%**  
Knowledge of *Code* covering services, electrical loads and determination of proper size and type of service and feeder conductors and rating. Installation of panelboards, switchboard and overcurrent devices. Knowledge of circuit requirements. Application of *Code* covering electrical outlets and devices, including wire connectors and methods.

- **Raceways**  
**Journeyman 14%**                      **Master 11%**  
Knowledge of all types of raceways and their uses. Determining proper size conductor fill, support and methods of installation. Application of proper type, use and support of boxes and cabinets, etc.
- **Conductors**  
**Journeyman 13%**                      **Master 10%**  
Determination of ampacity, type of insulation, usage requirements, methods of installation, protection support and termination.
- **Motors and Controls**  
**Journeyman 11%**                      **Master 11%**  
Knowledge of *Code* governing installations of generators, motors and controls. Includes calculations for motor feeders and branch circuits, short circuit, ground fault, overload protection, and disconnecting means. Knowledge of control circuits and motor type, application and usage.
- **Utilization and General Use Equipment**  
**Journeyman 10%**                      **Master 9%**  
Knowledge of *Code* covering lighting, appliances, heating and air conditioning equipment, generators, transformers, etc.
- **Special Occupancies and Equipment**  
**Journeyman 6%**                      **Master 10%**  
Knowledge of *Code* regarding hazardous locations, health care facilities, places of assembly, etc. Includes *Code* on signs, welders, industrial machinery, swimming pools, etc.
- **General Knowledge of the Electrical Trade and Calculations**  
**Journeyman 19%**                      **Master 21%**  
Terminology, practical calculations such as load computations, voltage drop, conductor derating, power factor, voltage and current ratings of equipment and branch circuit calculations.
- **Alarm, Communication and Low Voltage Circuits**  
**Journeyman 4%**                      **Master 4%**  
Knowledge of circuits and equipment operating at less than 50 volts. Includes signal alarm systems and sound systems.

#### LIMITED EXAMINATIONS

##### Limited to House Wiring

- Grounding and Bonding – 10%
- Services, Feeders, Branch Circuits and Overcurrent Protection – 20%
- Raceways – 8%
- Conductors – 14%
- Motors and Controls – 2%

- Utilization and General Use Equipment – 12%
- Special Occupancies and Equipment – 6%
- General Knowledge of the Electrical Trade and Calculations – 26%
- Low Voltage Circuits – 2%

#### **Limited to Low Energy**

- Grounding and Bonding – 6%
- Services, Feeders, and Branch Circuits – 2%
- Raceways and Boxes – 6%
- Conductors and Cables – 10%
- Control Equipment and Wiring – 2%
- Utilization Equipment – 2%
- Special Occupancies and Equipment – 2%
- General Electrical Knowledge – 6%
- Requirements for Electrical Installations – 6%
- Electronic and Electrical Fundamentals – 6%
- General Low Voltage – 8%
- Intrusion Detection and Alarms – 10%
- Fire Detection and Alarms – 10%
- Test Equipment – 4%
- Communications Systems – 10%
- Sound and Video – 10%

#### **Limited to Gasoline Dispensing**

- Grounding and Bonding – 6%
- Services, Feeders, and Branch Circuits – 18%
- Raceways and Enclosures – 18%
- Conductors – 8%
- Motors and Controls – 12%
- Utilization and General Use Equipment – 8%
- Special Occupancies and Equipment – 22%
- Signaling Circuits – 4%
- Electronics – 4%

#### **Limited to Outdoor Signs – 50 questions**

- Services, Feeders and Branch Circuits – 10%
- Raceways and Boxes – 8%
- Conductors – 8%
- Motors – 4%
- Utilization Equipment (Including Transformers) – 4%
- Special Equipment (Including Outline Lighting) – 20%
- Special Equipment (Including Sign – NEC) – 20%
- Special Equipment (Including Sign Systems and Theory) – 26%

#### **Limited to Traffic Signals**

- Grounding and Bonding – 2%
- Services, Feeders, and Branch Circuits – 2%
- Raceways and Enclosures – 10%

- Conductors – 2%
- Utilization and General Use Equipment – 54%
- Special Occupancies and Equipment – 2%
- General Knowledge and Calculations – 28%

#### **Limited to Water Pumps**

- Grounding and Bonding – 10%
- Services, Feeders, and Branch Circuits – 8%
- Raceways and Enclosures – 12%
- Conductors – 6%
- Motors and Controls – 30%
- Utilization and General Use Equipment – 8%
- Special Occupancies and Equipment – 6%
- General Knowledge and Calculations – 20%

#### **Limited to Refrigeration**

- Grounding and Bonding – 8%
- Raceways and Enclosures – 16%
- Conductors – 18%
- Utilization and General Use Equipment – 14%
- General Knowledge and Calculations – 18%
- Services, Feeders & Branch Circuits – 10%
- Motors and Controls – 16%

#### **Limited to Crane Technician**

- Grounding and Bonding – 10%
- Raceways and Enclosures – 10%
- Conductors – 12%
- Motors and Controls – 26%
- General Knowledge and Calculations – 6%
- Signaling Circuits – 10%
- Cranes and Hoists (Article 610) – 26%

### **Reference Information**

The primary reference book for all examinations is the *National Electrical Code*. The following references are also recommended. These materials may NOT contain all the general knowledge necessary within each classification. Because of circumstances beyond our control, some of these references may go out of print or be unavailable. Contact a bookstore or library for similar reference material.

1. *American Electrician's Handbook*, Croft and Summers, McGraw-Hill Book Company.
2. *Sign Electrician's Workbook*, James G. Stallcup, American Technical Publishers, Inc.
3. *Design and Application of Security/Fire-Alarm Systems*, John E. Traister, McGraw-Hill Book Company.
4. *NEMA Training Manual on Fire Alarm Systems*, National Electrical Manufacturers Association.
5. *NFPA-72*, National Fire Protection Association.

6. *Proprietary Burglar Alarm Systems*, U.L. #1076, Underwriters Laboratories, Inc.
7. *Understanding and Servicing Alarm Systems*, Trimmer and Butterworth, Butterworth Publishers.
8. *Fire Alarm Signaling Systems Handbook*, Burkowski and O'Laughlin, NFPA.
9. *Neon Installation Manual*, International Association of Electrical Inspectors.